

WHAT IS CLAIMED IS:

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1. A method of transmitting data,
comprising the steps of:

(a) performing predetermined processing on
transmission data on a frequency axis such that a
10 zero signal and/or an inverted signal is inserted
between transmission signals of the transmission
data on a time axis; and

(b) transforming the transmission data
processed in the step (a) into a time-axis signal.
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2. The method according to claim 1,
20 wherein the step (a) comprises the step (c) of
performing the predetermined processing on the
transmission data on the frequency axis such that
the inverted signal and at least one zero signal
point are inserted between the transmission signals
25 on the time axis.

30 3. The method according to claim 1,
wherein the step (a) comprises the step (d) of
copying the transmission data on the frequency axis,
and

the step (b) comprises the step (e) of
35 processing the transmission data and the copied
transmission data in parallel.

4. The method according to claim 1,
wherein the step (a) comprises the step (f) of
performing the predetermined processing on the
transmission data such that the transmission signal
5 of the transmission data is delayed by a
predetermined time, and the delayed transmission
signal is subtracted from the transmission signal.

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5. The method according to claim 4,
further comprising the step (g) of decreasing a
roll-off rate of frequency characteristics in the
15 processing of the step (f).

20 6. The method according to claim 5,
wherein in the frequency characteristics, a band
width is about 25 MHz, and the decreased roll-off
rate is about 20 %.

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7. The method according to claim 1,
wherein the step (b) comprises the step (h) of
30 transforming the transmission data processed in the
step (a) into the time-axis signal by using inverse
fast Fourier transform processing.

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8. The method according to claim 3,
wherein the step (b) comprises the step (h) of
transforming the transmission data processed in the
step (a) into the time-axis signal by using inverse
5 fast Fourier transform processing,
and the step (d) comprises the step (i) of
determining a first number of points that are
assigned to the transmission data such that data of
both the transmission data and the copied
10 transmission data correspond to a second number of
points that is a number of carriers used in the
inverse fast Fourier transform processing.

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9. The method according to claim 3,
wherein the step (d) comprises the step (j) of
adjusting a number of times of copying the
20 transmission data, the number of times of copying
being a number of times of generating transmission
data by copying the transmission data.

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10. The method according to claim 3,
wherein the step (d) comprises the step (k) of
assigning frequency bands each having a
30 substantially same width to the transmission data
and the copied transmission data, respectively.

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11. A data transmission device,
comprising:

frequency-axis processing means for
performing predetermined processing on transmission
5 data on a frequency axis such that a zero signal
and/or an inverted signal is inserted between
transmission signals of the transmission data on a
time axis; and

time-axis transform means for transforming
10 the transmission data processed by the frequency-
axis processing means into a time-axis signal.

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12. The data transmission device
according to claim 11, wherein the frequency-axis
processing means perform the predetermined
processing on the transmission data on the frequency
20 axis such that the inverted signal and at least one
zero signal point are inserted between the
transmission signals of the transmission data on the
time axis.

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13. The data transmission device
according to claim 11, wherein the frequency-axis
30 processing means comprise copying means for copying
the transmission data on the frequency axis, and
the time-axis transform means process the
transmission data and the copied transmission data
in parallel.

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14. The data transmission device
according to claim 11, wherein the frequency-axis
processing means comprise delay finite-difference
means for delaying the transmission signal, and
5 subtracting the delayed transmission signal from the
transmission signal.

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15. The data transmission device
according to claim 14, wherein the delay finite-
difference means use a decreased roll-off rate in
frequency characteristics of the frequency-axis
15 processing means.

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16. The data transmission device
according to claim 15, wherein in the frequency
characteristics, a band width is about 25 MHz, and
the decreased roll-off rate is about 20 %.

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17. The data transmission device
according to claim 11, wherein the time-axis
30 transform means transform the transmission data
processed by the frequency-axis processing means
into the time-axis signal by using inverse fast
Fourier transform processing.

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18. The data transmission device
according to claim 13, wherein the time-axis
transform means transform the transmission data
processed by the frequency-axis processing means
5 into the time-axis signal by using inverse fast
Fourier transform processing, and

the copying means determine a first number
of points that are assigned to the transmission data
such that data of both the transmission data and the
10 copied transmission data correspond to a second
number of points that is a number of carriers used
in the inverse fast Fourier transform processing.

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19. The data transmission device
according to claim 13, wherein the copying means
adjust a number of copies of the transmission data
20 generated by the copying means.

25 20. The data transmission device
according to claim 13, wherein the copying means
assign frequency bands each having a substantially
same width to the transmission data and the copied
transmission data, respectively.

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